

Claims:

1. An electrolytic capacitor comprising: an anode of nitrogen-doped titanium or titanium alloy; and a dielectric layer formed by anodically oxidizing the anode on a surface of the anode.
2. The electrolytic capacitor as claimed in Claim 1, wherein said titanium alloy is formed by alloying titanium with at least one of additive metal selected from tungsten, vanadium, zinc, aluminum, molybdenum, hafnium, zirconium, and niobium.
3. The electrolytic capacitor as claimed in Claim 2, wherein additive metal content of the titanium alloy is 5 wt% or below.
4. The electrolytic capacitor as claimed in Claim 3, wherein the additive metal content of the titanium alloy is in a range of 0.05 to 2.5 wt%.
5. The electrolytic capacitor as claimed in Claim 1, wherein nitrogen is doped in the titanium or the titanium alloy in a range of 0.01 to 5 wt%.
6. The electrolytic capacitor as claimed in Claim 5, wherein nitrogen is doped in the titanium or the titanium alloy in a range of 0.02 to 1 wt%.
7. The electrolytic capacitor as claimed in Claim 1, wherein fluorine is doped in said dielectric layer.

8. A fabrication method for electrolytic capacitor comprising the steps of: doping nitrogen in an anode of titanium or titanium alloy; and forming a dielectric layer by anodically oxidizing the nitrogen-doped anode on a surface of the anode.

9. The fabrication method for electrolytic capacitor as claimed in Claim 8, wherein nitrogen is doped in the anode of titanium or titanium alloy by heat-treating the anode of titanium or titanium alloy in nitrogen atmosphere.

10. The fabrication method for electrolytic capacitor as claimed in Claim 9, wherein a temperature of heat-treating the anode of titanium or titanium alloy in nitrogen atmosphere is in a range of 300 to 1500°C.

11. The fabrication method for electrolytic capacitor as claimed in Claim 10, wherein the temperature of heat-treating the anode of titanium or titanium alloy in nitrogen atmosphere is in a range of 500 to 900°C.

12. The fabrication method for electrolytic capacitor as claimed in Claim 8, wherein said titanium alloy is formed by alloying titanium with at least one of additive metal selected from tungsten, vanadium, zinc, aluminum, molybdenum, hafnium, zirconium, and niobium.

13. The fabrication method for electrolytic capacitor as claimed in Claim 12, wherein additive metal content of the titanium alloy is 5 wt% or below.

14. The fabrication method for electrolytic capacitor as claimed in Claim 13, wherein the additive metal content of the titanium alloy is in a range of 0.05 to 2.5 wt%.

15. The fabrication method for electrolytic capacitor as claimed in Claim 8, wherein aqueous solution containing fluorine ion is used as the solution in anodically oxidizing the anode of titanium or titanium alloy.

16. The fabrication method for electrolytic capacitor as claimed in Claim 15, wherein the aqueous solution containing fluorine ion is one of aqueous solution selected from ammonium fluoride, potassium fluoride, sodium fluoride, and fluorine acid.